Science Flight Report
Operation Ice Bridge August 2010

UAF Alaska Flight No 4
Mission Plan: Bering Glacier

Flight Report Summary

Aircraft	**DHC-3 Otter**
Flight Number	UAF-4
Flight Request	10M014
Flight Hours	3.8
Take off time	10:02:00.00 Z from Ultima Thule Outfitters Lodge
Landing time	13:53:00.00 Z at Ultima Thule Outfitters Lodge
Date	Saturday, Aug 21 2010, Day of Year 233
Purpose of Flight	LiDAR surveys of the Bering Glacier system.
Aircraft Status	Airworthy.
Sensor Status	operational.
Significant Issues	None.
Accomplishments	• LiDAR centerline profiles of the Quintino Sella, Bagley, Bering, Steller and West Bagley glaciers and icefields, all part of the the greater Bering Glacier system.
Planned Events	• The next surveys will continue to the east of this flight, mostly in the Malaspina/Seward and Icy Bay systems.

Science Data Report Summary

This mission performed LiDAR surveys of glaciers within the Bering Glacier area of southern Alaska. LiDAR data were collected at a height of 500-650 meters above the glacier surface, and mapped a 0.5 km wide swath along the centerline of the glaciers. This swath map consists of measurements from individual laser shot points on a roughly 1 meter by 1 meter grid. The individual point measurements of the glacier surface latitude, longitude and elevation have an accuracy of approximately ±10 cm.
Geographic keywords: (Bering Glacier, Bagley Ice Valley, SE Alaska)
Repeat Mission: yes (2009, 2008, 2003, 2000, 1995)

Instrument	Instrument Operational		Data Volume	Instrument Issues
	Target area	Entire Flight		
UAF LiDAR	Yes	No	0.44 GB in raw binary format	None
GPS	Yes	Yes	142 MB in raw binary format	None
IMU	Yes	Yes	130 MB in raw binary format	None

Mission Log (Chris Larsen)

Today's mission is a LiDAR survey of glaciers within the St. Elias Mountains of south central Alaska, specifically those glaciers that are part of or near the Bering/Bagley system. The Bering/Bagley Glacier is the longest and largest mountain glacier in North America. The Bering has experienced a mild surge over the past year, with significant crevassing but little to no terminus advance.

The weather was very calm, with no wind at any altitude flown.

Individual instruments on board the aircraft:

LiDAR: The UAF LiDAR systems worked well.

GPS: System worked normally. No problems.

IMU: System worked well. No issues.

Figure 1: LiDAR ground tracks over Bering/Bagley/Steller glaciers.

Figure 2: Setting up a base station for local GPS kinematic positioning of the aircraft. The site is at 7500' elevation in the St. Elias Mountains.

Figure 3: The highly crevassed surface of the lower Bering Glacier, resultant from the mild surge over the past year.